

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
28 August 2003 (28.08.2003)

PCT

(10) International Publication Number  
**WO 03/070959 A3**

(51) International Patent Classification<sup>7</sup>: C12P 7/26, C12N 9/02, 15/53

(21) International Application Number: PCT/EP03/01537

(22) International Filing Date: 15 February 2003 (15.02.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
020 03 968.1 22 February 2002 (22.02.2002) EP

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(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:  
16 October 2003

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

WO 03/070959 A3

(54) Title: PROCESS FOR PRODUCING LEVODIONE

(57) Abstract: An enone reductase characterized by a molecular mass of 61,300 ± 5,000 Da; NADPH and NADH as co-factor; a temperature optimum of 55-60°C at pH 7.4; a pH optimum of 4.5-8.5 and a substrate specificity on α,β-unsaturated ketones, especially derived from a yeast and a process for the preparation of levodione from ketoisophorane.

## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 03/01537

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 C12P7/26 C12N9/02 C12N15/53

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 C12P C12N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, BIOSIS, MEDLINE, FSTA, CHEM ABS Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	VAZ ALFIN D N ET AL: "Old yellow enzyme: Aromatization of cyclic enones and the mechanism of a novel dismutation reaction." BIOCHEMISTRY, vol. 34, no. 13, 1995, pages 4246-4256, XP001164161 ISSN: 0006-2960 the whole document ----	1-18 -/-

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

## \* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the International filing date
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- "T" later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed Invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed Invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the International search

26 August 2003

Date of mailing of the International search report

11/09/2003

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## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 03/01537

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>WANNER PETER ET AL: "Purification and characterization of two enone reductases from <i>Saccharomyces cerevisiae</i>" <i>EUROPEAN JOURNAL OF BIOCHEMISTRY</i>, BERLIN, DE, vol. 255, no. 1, July 1998 (1998-07), pages 271-278, XP002202649 ISSN: 0014-2956 the whole document</p> <p>—</p>	1-18
P,X	<p>KATAOKA M ET AL: "OLD YELLOW ENZYME FROM <i>CANDIDA MACEDONIENSIS</i> CATALYZES THE STEREOSELECTIVE REDUCTION OF THE C = C BOND OF KETOISOPHORONE" <i>BIOSCIENCE, BIOTECHNOLOGY AND BIOCHEMISTRY</i>, XX, XX, vol. 66, no. 12, December 2002 (2002-12), pages 2651-2657, XP009011699 ISSN: 0916-8451 the whole document</p> <p>—</p>	1-18
P,X	<p>WADA M ET AL: "PRODUCTION OF A DOUBLY CHIRAL COMPOUND, (4R,6R)-4-HYDROXY-2,2,6-TRIME THYLCYCLOHEXANONE, BY TWO-STEP ENZYMATIC ASYMMETRIC REDUCTION" <i>APPLIED AND ENVIRONMENTAL MICROBIOLOGY</i>, WASHINGTON, DC, US, vol. 69, no. 2, February 2003 (2003-02), pages 933-937, XP009011700 ISSN: 0099-2240 the whole document</p> <p>—</p>	1-18
A	<p>EP 1 074 630 A (HOFFMANN LA ROCHE) 7 February 2001 (2001-02-07) the whole document</p> <p>—</p>	1-18
A	<p>US 4 072 715 A (BOGUTH WALTER ET AL) 7 February 1978 (1978-02-07) cited in the application the whole document</p> <p>—</p>	1-18
A	<p>STOTT KELVIN ET AL: "Old Yellow Enzyme: The discovery of multiple isozymes and a family of related proteins." <i>JOURNAL OF BIOLOGICAL CHEMISTRY</i>, vol. 268, no. 9, 1993, pages 6097-6106, XP002252405 ISSN: 0021-9258 the whole document</p> <p>—</p>	1-18
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**INTERNATIONAL SEARCH REPORT**International Application No  
PCT/EP 03/01537**C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT**

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	NIINO YUKO S ET AL: "A new Old Yellow Enzyme of <i>Saccharomyces cerevisiae</i> ." JOURNAL OF BIOLOGICAL CHEMISTRY, vol. 270, no. 5, 1995, pages 1983-1991, XP002252406 ISSN: 0021-9258 the whole document _____	1-18

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

International Application No  
**PCT/EP 03/01537**

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EP 1074630	A 07-02-2001	EP BR CA CN JP US	1074630 A2 0003302 A 2315837 A1 1285410 A 2001061488 A 6428991 B1	07-02-2001 05-06-2001 02-02-2001 28-02-2001 13-03-2001 06-08-2002
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